

The Potential Impact of a Master's Degree in Community/Public Health Nursing
on Public Health Issues in Malawi

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Abstract

The overall research problem addressed in this paper is the projected or anticipated impact of a Community/Public Health Nursing (C/PH) Master's program on the public health of Malawi, a developing country in Southeast Africa. This research is important because Malawi faces many severe public health issues and solutions to these issues have proved elusive. In addition, Malawi has limited resources and must carefully consider the opportunity costs of choosing which potential solutions to fund.

The purpose of this paper is to assist the Kamuzu College of Nursing in Malawi with a recommendation on whether to proceed with creating a Master's Degree in C/PH Nursing program. The specific interrelated public health issues that this program strives to address include the World Health Organizations Health Indicators, Economic Factors, Demographic Factors, Environmental Factors, and Education Factors.

The research method for this paper is based on identifying the Public Health issues in Malawi through structured interviews with stakeholders, review of documents from Kamuzu College of Nursing, as well as publicly available material on the state of public health in Malawi. Based on these needs a review of the current research literature was conducted and recommendations and next steps presented.

The research literature showed evidence of the positive impact C/PH Nurses have on public health issues, including improving health indicators. Additionally, the literature showed evidence of the correlation between the educational preparation of nurses and public health outcomes. Finally, the literature showed the positive impact on public health of higher education capacity development in the developing world. The literature did not show evidence of impact on public health of the problem of insufficient funding for nurse educational programs or sufficient

pay for nurses, and only showed partial impact on the public's health from the issue of "Brain Drain" and the HIV/AIDS toll on the nursing workforce in Malawi.

The evidence supports a recommendation for the development of a Master's Degree in C/PH Nursing, but only after a comprehensive effort to rectify several prominent issues. Leadership actions recommended were based on UNESCO's Framework for Priority Action for Change and Development of Higher Education, and several examples of these actions were explored specific to Malawi's development of a Master's Degree in C/PH Nursing.

The Potential Impact of a Master's Degree in Community/Public Health Nursing
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Deciding to implement a new graduate level nursing program is a significant endeavor for any institution of higher education. However, for an institution in one of the poorest developing countries in the world with very limited resources and numerous serious public health issues, the challenges may seem insurmountable. Kamuzu College of Nursing (KCN) at the University of Malawi is evaluating implementing a Master's Degree in Community/Public Health Nursing (C/PH).

Dr. Angela Chimwaza, Dean of Post Graduate and Research at KCN, contracted with me to conduct a Needs Assessment focused on the development of a Master's Degree in C/PH Nursing. This work conducted during March 2010 served as my Field Practicum for the UNC-CH Master of Public Health (MPH)-Public Health Leadership Program (PHLP)--Nursing Focus. The results of the Needs Assessment inform this Master's Paper.

The purpose of this Master's Paper is to identify the current issues, review the research literature, analyze the data, and provide recommendations and leadership steps related to the impact of a Master's Degree in C/PH Nursing in Malawi. The following section describes Malawi's current public health issues, the status of nursing education, and the extreme nursing workforce shortage. This paper will attempt to answer the following questions:

- a. Do C/PH Nurses positively impact public health outcomes?
- b. Is there a correlation between C/PH Nursing educational preparation and public health outcomes?
- c. Does higher education capacity building in developing countries impact public health outcomes?

Malawi and its Current State of Public Health

Malawi is a small country situated within the tropics of Southeastern Africa along the Great Rift Valley. Its most notable geographic feature is Lake Malawi which runs from North to South and covers 20% of the country's land area. Malawi is bordered by Mozambique, Zambia, and Tanzania (See Appendix A). It has a total area of 45,747 square miles—a bit smaller than North Carolina. The 2010 population projection from the Malawian National Statistic Office is 14,553,011 and the population density of 333.6 people/square miles roughly twice the population density of North Carolina. Approximately 80- 90% of the Malawian population lives in rural settings with the main urban centers comprising the cities of Lilongwe, Blantyre, Zomba, and Mzuzu.

Numerous complex factors interconnect to affect public health in Malawi. The most notable of these will be explored in this section, including Health Indicators, Demographics, Economic, Environmental, and Educational Factors.

Health Indicators

The World Health Organization (WHO) developed a list of health indicators that track the public health of countries around the world. These indicators include: Mortality, Morbidity, Health Service Coverage, Risk Factors, Health System Resources, Inequity in Health Care and Health Outcomes, Demographic and Socioeconomic Statistics. Some notable indicators and sub indicators for Malawi are displayed in Appendix B, with comparisons to other countries in the East and Southern Regions of Africa.

Many of these indicators are alarming and merit attention. For example, according to the United Nations (UN) (2008), “A child born in a developing country is over 13 times more likely to die within the first five years of life than a child born in an industrialized country. Sub-

Saharan Africa accounts for about half the deaths of children under five in the developing world.” Notably, the top five leading causes of death for Malawi were: HIV/AIDS 34%; lower respiratory infections 12%; malaria 8%; diarrheal diseases 8%; and peri-natal conditions 3% (WHO, 2006).

The impact of the HIV/AIDS epidemic has been particularly severe in Malawi and other Sub-Saharan African countries. It is projected that 33 million people worldwide have HIV/AIDS and 23 million people--or 70% of this total—live in Sub-Saharan Africa (UNAIDS, 2008a). Malawi’s 15 to 49 years old population has an estimated HIV/AIDS prevalence rate of 11.9%. It is the leading cause of death in Malawi and a major factor in their low life expectancy of around 49 years (WHO, 2008). Orphanages--something previously unknown to Malawians--are now common while coffin shops have sprung up throughout Malawi. Not immune to the impact of HIV/AIDS, the healthcare workforce has taken a devastating blow. The National Association of Nurses in Malawi (NONM) estimates that four nurses are lost to HIV and AIDS related illness every month (2008).

Demographic Factors

Demographic factors also illuminate the health of the public in Malawi and a few of these factors are provided here. The adolescent fertility rate was 160% in 2003, while the 2006 total fertility rate per woman in Malawi was 5.7 (WHO, 2006; UN, 2008). Population median age (in years) was 16; the population proportion over 60 was 5.0% in 2006; and 20.8% of the population was living below the poverty line (% living on <\$1 per day) in 2004 (WHO, 2006).

Economic Factors

The Malawian economy depends on substantial inflows of economic assistance from the International Monetary Fund (IMF), the World Bank, and individual donor nations. In late 2000,

Malawi was approved for relief under the Heavily Indebted Poor Countries (HIPC) program. In November 2002 the World Bank approved a \$50 million drought recovery package to be used for famine relief. In 2004 Malawi requested the IMF to put it on a staff-monitored program, which aims to address macro-economic imbalances by containing government borrowing and holding down inflation.

In 2002 53% of Malawi's population was living below the poverty line (CIA Fact book, n.d.). The 2008 Gross Domestic Product (GDP) in Malawi was 4,269 (in millions of US Dollars)—by sector: 35.5% agriculture, 19.9% Industry, and 44.6% service; and the 2008 per capita GDP was \$299 (World Bank, 2009), while Malawi's total expenditure on health as percentage of GDP in 2002 was 8.9% (WHO, 2002). According to the CIA World Fact book the 2009 growth rate in GDP was 5.9 and the inflation rate on consumer goods was 8.5%.

Environmental Factors

Some of Malawi's environmental issues impacting public health include: deforestation; land degradation; water pollution from agricultural runoff, sewage, and industrial wastes; siltation of spawning grounds endangers fish populations. With an economy largely based on subsistence agriculture and about 80-90% of its population rural, the population has been hard hit by drought and crop failures, which have produced widespread famine in recent years. Although 4.3 million hectares of land are classified as arable in Malawi, probably only about 2.4 million hectares are suitable for agriculture. Almost all fertile land in Malawi is already under cultivation, and continued population pressure raises the threat of soil erosion and exhaustion, as well as infringement on forest resources for agricultural purposes.

Educational Factors

The level of education in Malawi is one of the factors that affect public health. According to Finscope Malawi (2008), 20% of Malawians have no formal education, 56% have only primary school education, 21% have completed secondary school, 1% has vocation school training, and 2% have university or higher education. A lack of education often results in illiteracy magnifying the many interrelated public health challenges. The 2009 estimated literacy rate among those 15 years or older was 6.1% (UNDP, Date)—90.5% in urban areas, and 58.7% in rural settings (MOE, 2005). The literacy rate for women 15 or older was lower at 49.8% (CIA Fact Book, n.d.).

In order to obtain a university education in Malawi, a student must be selected. This is based on their Malawi Certificate of Education (MCE) results taken at the end of secondary school. The top 500 students are given a place at one of the five constituent college of the University of Malawi or Mzuzu University. The government gives each of these students a full scholarship that covers the cost of tuition, fees, and room and board. Students that do not score as well on the MCE can pursue higher education at the other colleges or training schools, but will have to fund their education privately. These programs train the lower cadre of professionals and do not offer academic degrees above the Diploma level.

The Current State of Nursing Education in Malawi

C/PH Nurses are a critical resource in the effort to improve the public's health throughout the world. C/PH Nursing is defined as the practice of promoting and protecting the health of populations using knowledge from nursing, social, and public health sciences. The title "Public Health Nurse" (PHN) designates a registered nurse with educational preparation in both public health and nursing. The primary focus of PH Nursing is to promote health and prevent disease

for entire population groups. This is done by working with individuals, families, communities, and/or systems. Their practice is multifaceted, and has resulted in positive health outcomes.

Malawi does not produce enough nurses to meet the needs of its population despite efforts to increase the number of institutions offering nursing programs and the number of graduates from these programs (Appendix C).

At this time Malawi does not offer a Doctoral Degree in Nursing and a nurse must travel outside Malawi to obtain a PhD. Until recently, those wanting a Master's Degree in nursing also had to go to abroad to obtain this degree. KCN now offers two Master's of Science (MSc.) Degrees: a MSc. Degree in Midwifery and a MSc. Degree in Reproductive Health. They are in the process of developing a third MSc. Degree in Pediatric Nursing and are exploring starting a MSc. Degree in Community/Public Health Nursing. Although not a nurse training program, the University of Malawi's College of Medicine offers a Master of Public Health (MPH) Degree that nurses interested in community health have enrolled in since the program's inception in January 2003.

Two nursing programs offer a Bachelors of Science (BSc.) Degree in nursing: KCN--founded in 1965-- and Mzuzu University—founded in 1997. Both programs offer a traditional four year program and a two year program for Mature Entry students upgrading from a Diploma to a BSc. Degree. The Mature Entry program at KCN offers three specialization options: Community Health Nursing, Education/Teaching, or Health Systems Management & Administration. St. John of God in Mzimba of the Christian Health Association of Malawi (CHAM) also offers a BSc. Degree in Psychiatric and Mental Health Nursing. This program is validated by and affiliated with KCN.

A Diploma in Nursing and Midwifery Technician is offered by the nine CHAM Nursing Training Programs. According to Potiphar Kumzinda, (n.d.), these organizations train 80% of the midlevel nurses in Malawi. Malawi College of Health Sciences (MCHS) has programs for a number of cadres of health providers including Clinical Officers, Medical Assistants, Laboratory Technicians, Radiology Technician, Nurse Technicians, and Diploma Nurses and Psychiatric Nurses. They also offer an Upgrading Diploma in Nursing and Midwifery. Unfortunately, there are no data available about the quality of the various nursing educational programs in Malawi.

As described in the section on educational factors of Public Health in Malawi, the government of Malawi provides scholarships to all the students selected to the BSc. Degree program at Mzuzu University and the BSc. Degree and MSc. Degree students at KCN. Each 4 years scholarship is worth \$24,400 (Personal communication with Mr. Stephen F. Chakholoma – College Finance Officer. KCN–March, 2010). Students attending one of the CHAM Nursing programs or the MCHS must find private funding. However, the CHAM programs receive some financial support from their religious benefactors while both CHAM and MCHS receive some funding from the government of Malawi.

Nurses that work for one of the Malawian Government/MOH facilities may be eligible receive a full scholarship for a Master's Degree and possibly a PhD. Until two years ago, that meant traveling to another country, generally the United Kingdom, the United States, or South Africa for the duration of the program. Students getting a MSc. Degree in South Africa or other African Country in Southern Africa get \$31,766 for a two year program. Students going to the United Kingdom get a MSc. Degree get \$39,335 for the two year program (Personal communication with Mr. Stephen F. Chakholoma –March, 2010). Now that KCN is offering MSc. Degrees in Nursing, the cost of the government scholarship is about \$16,000.

In an effort to in part increase the capacity and improve the quality of Malawi's nurse educational programs, the Malawian government initiated the 6-Year Emergency Human Resources Programme (EHRP). This program has an estimated cost of US\$ 272 million for a period of six years—2004-2010. Major funding for the EHRP came from the Malawian Government and international development agencies. As a result of this program, KCN was able to increase the number of BSc. Degree and Diploma to BSc. Degree nursing students matriculating by about 25% between the years 2006 through 2010.

The Current State of the Nursing Workforce in Malawi

Nurses in Malawi are employed in a number of settings. The majority of nurses work for the Malawian government in one of the approximately 400 MOH facilities consisting of: Central Hospitals, District Hospitals, Hospitals, Mental Hospitals, Health Centers, Maternity Centers, Clinics, and Dispensaries (MOH, 2002). The next largest employer of Nurses in Malawi is CHAM with about 170 health facilities in Malawi including Hospitals, Clinics, Health Centers, Dispensaries, Maternity Facilities, Mental Hospitals, and a Rehabilitation Center. Other employers of Nurses in Malawi include Local Government, Banja La Ntsogolo, and Non-Governmental Organizations.

The estimated 620 health facilities in Malawi, each serve approximately 23,587 Malawians. In 2004, 33% of all established posts for all levels of health professionals were vacant. In 2004, there were 6,084 established posts for all levels of trained nurses in Malawi; however, only 36% of these posts were filled, leaving a vacancy rate of 74% (MOH, 2004). "The MOH states that the average number of (Registered) nurses in health centers is approximately 1.9, an indication that many were run with one or none at all and indeed, some health centers were manned as health posts by Health Surveillance Assistants with as little as ten weeks of

training (Record and Mohiddin, 2006).” Most nursing positions are filled by Nursing Technicians, who have similar preparation as a Certified Nursing Assistant (CNA) in the US.

Density of Nurses to Population in Malawi

Malawi does not produce enough nurses to meet the needs of their population and is losing many to “Brain Drain” and better paying positions abroad. In 2008, Matt Gordan of the United Kingdom’s Department for International Development estimated that Malawi had 33,376 Health Workers of which 71% provide health services. By his estimates, this was comprised of 30% lay health workers, 10% nurses, 1% physicians, 4% Mid-level cadres (e.g. clinical officers), and 4% technicians (e.g. pharmacists). Chrissie Chilomo, Nursing Director of the Nurses and Midwives Council of Malawi (NMCM), said on March 23, 2010 that there were a total of 8,934 nurses in Malawi (Personal Communication, March 23, 2010). Of this total, 3279 are Level 1-Registered Nurses and Midwives, 2834 are Level 2-Nurse Midwifery Technicians, and 2821 are Level 2-Enrolled Nurse Midwives. Therefore, in Malawi there was an estimated 1,629 people per one trained nurse/midwife, or 0.61 per 1000.

Key factors associated with low density of nurses in Malawi.

In 2003 Malawi conducted a national assessment to analyze the overall health workforce situation. The low density of the Malawian health workforce can be attributed to four key factors: 1) insufficient training opportunities, as discussed above; 2) deteriorating health of the workforce, as a result of HIV/AIDS; 3) rural imbalance; and 4) “Brain Drain”. Each of these will be addresses in more detail.

Deteriorating nursing workforce due to HIV/AIDS.

The rate of HIV/AIDS in Sub-Saharan Africa is the highest in the world carrying over 70% of the global burden of disease and 22.4 million children and adults living with the disease.

Although the rate in Malawi is lower than some of its neighboring countries—notably Lesotho at 23.1%, Botswana at 23.9%, Swaziland at 26.1%, and South Africa at 18.1%—it is still disturbingly high at 11.9% of its population 15-49 years old with HIV/AIDS (USAIDS, 2009). If the 2008 estimates by the National Association of Nurses in Malawi (NONM) are correct and four nurses are lost to HIV and AIDS related illness every month, Malawi will not be able to produce enough new nurses to even maintain the currently insufficient nurse population ratio even with the efforts of the EHRP.

Rural/urban imbalance.

Unbalanced distribution of health personnel between and within countries is a worldwide, longstanding and serious problem. All countries, rich and poor, report a higher proportion of health personnel in urban and wealthier areas. One of the greatest challenges is the difficulty developing countries face in producing, recruiting, and retaining health professionals, particularly in remote areas. According to Lehmann, Dieleman and Martineau (2008) low wages, poor working conditions, lack of supervision, lack of equipment and infrastructure as well as HIV and AIDS, all contribute to the flight of health care personnel from remote areas. With 80-90% of all Malawians living in rural areas, this is a serious public health issues for Malawi.

Brain drain.

“Brain Drain” is the large-scale emigration of educated and professional individuals with technical skills and knowledge from one country to another, usually for economic reasons. The migration of health professionals trained in Africa to developed nations has compromised health systems in African and according to Muula, Panulo, Maseko (2004) the healthcare delivery systems of many countries in Africa are unable to deliver adequate quality and quantity of services attributable to, among other reasons, the shortage of health professionals. Kuehn (2008)

states, “A worldwide shortage of health care workers, coupled with a disproportionate concentration of health worker in developed countries and urban areas, stands in the way of achieving such key public health priorities as reducing child and maternal mortality, increasing vaccine coverage, and battling epidemics such as HIV/AIDS (p. 1853).”

The United States (US) and the United Kingdom (UK) are two of the main places nurses from Sub-Saharan Africa emigrate to for employment. The National Health Service of the UK has promoted the migration of nurses from developing countries to supplement their workforce via the International Nurse Recruitment program for decades. In 2002, Malawi lost 12% of its total nurse resources through immigration to the UK (Ross, Polsky, and Sochalski, 2005). This is even more daunting when taking into consideration that 37% of the world’s health care workers live in the Americas, predominately the US and Canada, yet these countries carry only 10% of the global disease burden. In contrast, Africa is home to only 3% of the world’s health care workers, yet has 24% of the global burden of disease (WHO, 2006b).

Compensation for Nurses in Malawi

Salaries of nurses employed in MOH facilities are set by the Malawian government. According to Banda (2010) in Malawian hospitals, most nurses become matrons and can earn a salary of \$400/month to \$467/month, including being given a house, water and electricity. After graduation nurses with a Certificate or Diploma in nursing usually start at a lower salary and get promotion through upgrading. They normally get a monthly salary of \$133/month to \$333/month in government hospitals. Mrs. Tulipoka Soko (personal communication, March 5, 2010) Matron of Queen Elizabeth Central Hospital (QECH) in Blantyre stated that the beginning MOH salary rate for Nurse Technicians is \$167/month, which was very similar to Mr. Banda’s estimates. Whereas Mrs. Margaret Chikwanje (personal communication March 4, 2010), Matron of the

CHAM--7th Day Adventist Private Hospital in Blantyre) shared that at this private hospital Nurse Technicians makes \$313/month, while the BSc. Degree prepared nurses earn \$467/month.

Salaries are generally much higher for nurses working for Non-governmental Organization as these are not regulated by the MOH. Nurses Educators working for KCN have a salary range from \$800/month to \$1667/month.

In April of 2005 the MOH introduced a 52% salary top-up supported by United Kingdom's Department for International development (DFID). This initially applied to eleven priority health cadres only, including nurses. There are however plans to include Health Surveillance Assistants (HSAs) to be the 12th cadre with funding under the global fund, round five. The number of staff receiving this 52% is steadily increasing; 5,345 in 2005 to 5,795 in 2006 (MOH, 2007, June).

With the enormous health workforce challenges facing the MOH, they had no choice but to devote more resources to these challenges which included the absolute numbers of skilled health workers, their distribution and skills mix and the conditions under which they perform their work. The Malawian government initiated the 6-Year Emergency Human Resources Programme (EHRP). This program has an estimated cost of \$272 million for a period of six years—2004-2010. Major funding for the EHRP came from the Malawian Government and international development agencies. This program was funded despite common donor concerns about the sustainability of funding salaries; partner support included salary top-ups due to the acute need to improve retention, and incentives such as improved housing, and improved training capacity and quality.

The EHRP aspired to double the number of nurses and triple the number of doctors in Malawi's MOH facilities. According to the MOH (2007) the results of this program have been

substantial, such as: there have been 3,498 additional posts filled between 2003 and 2007, including 33 medical officers, 253 clinical officers and 2,249 nurses. The 6-year EHRP is ending this year, and no further source of funding has been secured for its continuation. The consequences may prove ominous for the public health of Malawians.

In this section we have looked at Malawi's current state of public health, nursing education, and workforce. The following literature review examines the current research pertaining to the impact of C/PH Nursing on public health issues, the correlation between nursing education and public health outcomes, and higher education capacity development in the developing world.

Review of Literature

This literature review is composed of three main areas: literature related to the impact of Community/Public Health Nursing on public health issues, the correlation between nursing education and public health outcomes, and higher education capacity development in developing countries. The material for this review was compiled using the UNC-CH library's electronic journal database, Google Scholar searches, internet searches of national and international public health and Malawian Government websites, and KCN documents obtained while in Malawi.

Community/Public Health Nursing's Impact Public Health Outcomes

Assessing the impact of C/PH Nurse interventions on health outcomes is critically important, however, it is problematic. Goeppinger (1988) discussed the challenges in determining, measuring, and communicating the outcomes of Community-oriented nursing practice. Challenges identified included: lack of agreement about practice domain; difficulties specifying and operationalizing key concepts; inappropriate competition between quantitative

and qualitative research methodologies; unpredictable collegial and financial support; and inadequate dissemination of findings relevant to practice.

There is a scarcity of peer reviewed studies about the impact of C/PH Nurse interventions on public health outcomes in Africa. This is understandable considering the limited number of PhD or Master's prepared nurses scholars from the African continent currently available to conduct research. Additional research on the effectiveness of C/PH Nursing on public health outcomes in Africa is indicated.

Nwoke (2008) looked at CH Nursing practice in Nigeria and concluded that this, "branch of nursing is very efficient at prevention of disease, promotion of health, prolonging life and providing curative and rehabilitative services in the community (p. 143)." However, the author did not provide either qualitative or quantitative data to substantiate this conclusion. Oluwatosin (2008) discussed the potential impact CH Nurses could have in the early detection of breast cancer in Africa and stated that the role of the CH Nurse could not be over emphasized. Oluwatosin asserted that research must be encouraged to evaluate the impact of the CH Nurses. Kobler and Van Damme (2004) reported on HIV/AIDS in Malawi, Mozambique, Swaziland, and South Africa—four countries with some of the highest burden of HIV/AIDS in the world. They found that financial resources were not the major constraint in the implementation of the national HIV/AIDS treatment plans in these countries. The major constraint was the lack of skilled nurses--the principal health care professionals managing the HIV/AIDS crisis in these countries where physician are rare. The researchers suggested that the progress made in decreasing the spread of HIV/AIDS in these four countries can be attributed--to some degree--to CH nursing.

There are also a limited number of peer reviewed studies about the impact of nursing on public health outcomes in the developed world. The majority of these studies were conducted in

the United States and focused on home visitation programs. It should be noted that Oluwatosin (2008) cautioned against the direct extrapolation of these findings to the impact of C/PH Nursing on public health outcomes in Africa. Therefore, the application of this literature to Africa should be done with prudence.

Some of the strongest studies available demonstrating the impact PH Nurses on population health were done by David Olds for the Nurse-Family Partnership. In 2002, Olds, et al. reported on a randomized, controlled trial in Denver to evaluate the effectiveness of home visitation by paraprofessionals and by nurses as separate means of improving maternal and child health. They found that paraprofessionals produced small effects that rarely achieved statistical or clinical significance. Conversely, nurses produced significant effect on a wide range of maternal and child outcomes. Olds, et al. (2004a) conducted a follow-up to this study two years later. The researchers wanted to examine the effects of paraprofessionals or nurses two years after the program had ended. Again, results showed the impact on nurse-delivered program on maternal and child health continued to be greater than that of the paraprofessional-delivered program. Olds, et al. (2004b), conducted another randomized controlled trial in Memphis with a primarily urban black population to evaluate the effects of PHNs prenatal and infancy home visits on mother's fertility and economic self-sufficiency as well as academic and behavioral adjustment of their children. They found that the home visits continued to improve the life of the women and children at child age 6 years, 4 years after the program ended.

Developing partnership within the community is an essential component of improving the public health and is a key function of the C/PH Nurse. Padget, Bekemeier, and Berkowitz (2004) conducted a descriptive study of state-level partnerships for public health system change utilizing

the Turning Point Program. The researchers showed that C/PH Nurses were integral to the development of community partnerships and coalitions.

Akins, Williams, Silenas, and Edwards (2005) completed a qualitative study that looked at the role of PHNs in disease surveillance in Texas. They found that C/PH Nurses were essential for disease surveillance and effectively used informal communication channels to obtain critical surveillance information. Results also indicated that C/PH Nurses served essential leadership roles in community partnerships.

The World Health Organization (WHO)--the guiding and managing authority for health within the United Nations system--is responsible for providing leadership on global health issues, determining the health research plan, setting standards, disseminating evidence-based policy alternatives, providing technical support and monitoring health trends (WHO, 2010). C/PH nurses have played an important role in advancing the major achievements of the WHO in its 62 year history in the developing world, including: polio primary prevention through immunizations, the eradication of smallpox, primary health care, tobacco control and the revision of the International Health Regulations (WHO, 2008).

Correlation between Educational Preparations of Nurses and Public Health Outcomes

Peer reviewed research documenting any correlation between educational preparation of C/PH Nurses and public health outcomes--particularly research focused on graduate degree preparation of the C/PHN and public health outcomes--is scarce. This portion of the literature review will attempt to piece together a sampling of what was found on the topic.

Higher education in its knowledge producing and disseminating function is recognized as an essential driving force for national development in both developed and developing countries. However, according to a study completed by Harvard University (2006) the average tertiary

(university) enrollment in Sub-Saharan Africa is 5%, whereas the average tertiary enrollment in high-income countries is 70%. Total tertiary students in Sub-Saharan Africa number about 3 million and the current rate of increase in tertiary enrollment in Sub Saharan Africa is expected to double in 5 years, growth of 15% per year, which is the fastest in the world. Accordingly, there are reports showing the benefit of higher education for the developing world. The Africa Region Human Development Sector of the World Bank (2004) published a report of tertiary education in Sub-Saharan Africa. The report indicated that tertiary education plays a key role in the economic and social development of any nation and that no country can expect to successfully integrate in, and benefit from, this 21st century economy without a well-educated workforce. They stated that the stakes are particularly high for sub-Saharan Africa due to the comparatively low level of educational attainment by the workforce and the urgent need for sustained development to reduce poverty. According to the United Nations Educational, Scientific and Cultural Organization's (UNESCO) 2003 World Conference on Higher Education Partners, higher education has given ample proof of its viability over the centuries and of its ability to change and to induce change and progress in society. "Without adequate higher education and research institutions providing a critical mass of skilled and educated people, no country can ensure genuine endogenous and sustainable development and, in particular, developing countries and least developed countries cannot reduce the gap separating them from the industrially developed ones (p.2)."

A vision for advanced practice in Public Health Nursing was explored by Levin, et al. (2008) to prepare PHNs for the looming societal and global health threats of the 21st century. They felt that that the value of the advanced practice PH Nurses is in the ability to lead with an evidence-based approach to population health and systems practice. The C/PH Nurse's education

allows them to utilize the synergy between nursing processes and public health science to operate in complex health care systems and interdisciplinary teams. Additionally, the American Association of Colleges of Nursing (2010) stated that, “Graduates of Master’s Degree programs in nursing are prepared with additional broad knowledge and clinical expertise that builds and expands upon baccalaureate or entry-level nursing practice (p.1).” They went on to state that graduate level nurses in all settings can assume a variety of roles where the nurse can lead and mentor other healthcare workers and promote quality, evidence-based, and collaborative interventions with the entire health system.

There are studies demonstrating the correlation between level of education and outcomes for the surgical nurse. One such study was published in 2003 by Aiken, Clarke, Cheung, Sloane, and Silber who conducted a cross-sectional analysis of level of the nurse’s education and outcomes data for surgical patients. There was a statistically significant relationship between nurse education—baccalaureate or higher—and risk of patient mortality and failure-to-rescue rates. They found that for each 10% increase in proportion of nurses with higher degrees, the risk of mortality and failure to rescue decreased by 5%. Focusing on Public Health Nursing, Doherty and Coetzee (2005) completed a descriptive research study about the use of the Community Health Worker (CHW) as compared to PH Nurses in resource-poor setting in South Africa. The findings of their study highlighted the differences between the educational levels of these two groups. It was found that the CHW could play a role in public health services; however, because their role and function are not formalized their effectiveness in the community was less than that of the trained nurses. Even more specifically, Smith and Bazini-Barakat (2003) discuss the shift in emphasis in public health from provision of direct services to efforts targeted at improving the whole community. The C/PH Nurses educated about health promotion and disease prevention,

Scope and Standards of Practice, the 10 Essential Public Health Services, and Healthy People 2010's leading health indicators were more effective in improving outcomes than those not trained in these specialized areas of public health principles.

Higher Education Capacity Development in Developing Countries

For several decades, international development agencies have placed great emphasis on primary and, more recently, secondary education. But they have neglected higher education as a means to improve economic growth, mitigate poverty, and improve the health of the population (World Bank, 2004). Higher education's mission is to contribute to the sustainable development and improvement of society and a number of studies have been undertaken to explore the challenges of developing higher education in Sub-Saharan Africa.

The Government of Malawi (2002) proposed strategies to reduce poverty and improve health in the country. Several of these strategies specifically focused on higher education: Increase number of university positions from 3526 to 6824; disseminate instruction through distance education; decrease costs of the provision of higher education from government sources and finding alternative sources; involve universities in poverty reduction programs; increase access and equity—reserve 30% of university spots for girls; and establish scholarship schemes for girls and needy students. However, UNESCO (2009) found that despite the rapid expansion of higher education in Sub-Saharan Africa over the last four decades, their tertiary education systems are not yet equipped to absorb the growing demand. This report showed that in 2007 Malawi had less than 1% of the population of tertiary education age enrolled in either a local program or an international program. Additionally, the gender gap in higher education remains wide, with women in Malawi being less than 35% on the total enrollment.

There are a number of international agencies focusing on the development of higher education in the developing world. In October UNESCO held the World Conference on Higher Education at its headquarters in Paris and developed the World Declaration on Higher Education in the Twenty-First Century: Vision and Action. In the section “From Vision to Action” Articles 11-17 provide recommendations to nations/governments on what actions to take to develop higher education in their country. This document was supported by the Framework for Priority Action for Change and Development of Higher Education which provided more specific guidelines for the development of higher education. The 2009 World Conference on Higher Education: The New Dynamics of Higher Education and Research for Societal Change and Development, official Communiqué stated that, “At no time in history has it been more important to invest in higher education as a major force in building an inclusive and diverse knowledge society and to advance research, innovation and creativity. The past decade provides evidence that higher education and research contribute to the eradication of poverty, to sustainable development and to progress towards reaching the internationally agreed upon development goals, which include the Millennium Development Goals (MDGs) and Education for All (EFA) (p.2).”

Current efforts are being made to develop higher education capacity throughout the world. One example includes: the Fourth International Conference on Quality Assurance in Higher Education in Africa and Capacity Building (Training) Workshop which is scheduled for October 5-7, 2010 in Bamako, Mali. The theme of the conference is: Quality Assurance in Higher Education in Africa: Setting a Sustainable Agenda. The main objectives of the conference are to: review efforts at improving quality of delivery of higher education in Africa between 2000 and 2009; propose an agenda for action for meeting the challenges to quality assurance in

higher education in Africa at the individual, institutional, national, sub-regional and regional levels in the new decade; stimulate the setting up of projects and programs aiming at improving quality assurance practices in the region; and to seek partnerships in implementing the higher education quality assurance agenda. A second example is the 5th International Barcelona Conference on Higher Education—to be held in November 23-25, 2010—which is spotlighting a “Call for Good Practices”. The conference will analyze how higher education in developing countries is transforming itself to contribute to sustainability and how to identify aspects of this transformation that are appropriate to pertinent action. The Conference organizers are looking for examples of real experiences that incorporate sustainability into the curriculum, research, and institutional management at post-secondary levels, both in a local and international sphere. This conference offers an opportunity for every segment of higher education to join and to demonstrate how higher education institutions can move toward a sustainable future (GUNI, 2010).

Application of Literature to the Problem

This section analyzes the evidence presented in the literature review by applying it to the key public health issues in Malawi presented in the initial section of this paper. The three focus areas of the literature review are linked in turn to the public health issues. Public health issues that are addressed only partially or not at all are examined at the end of this section.

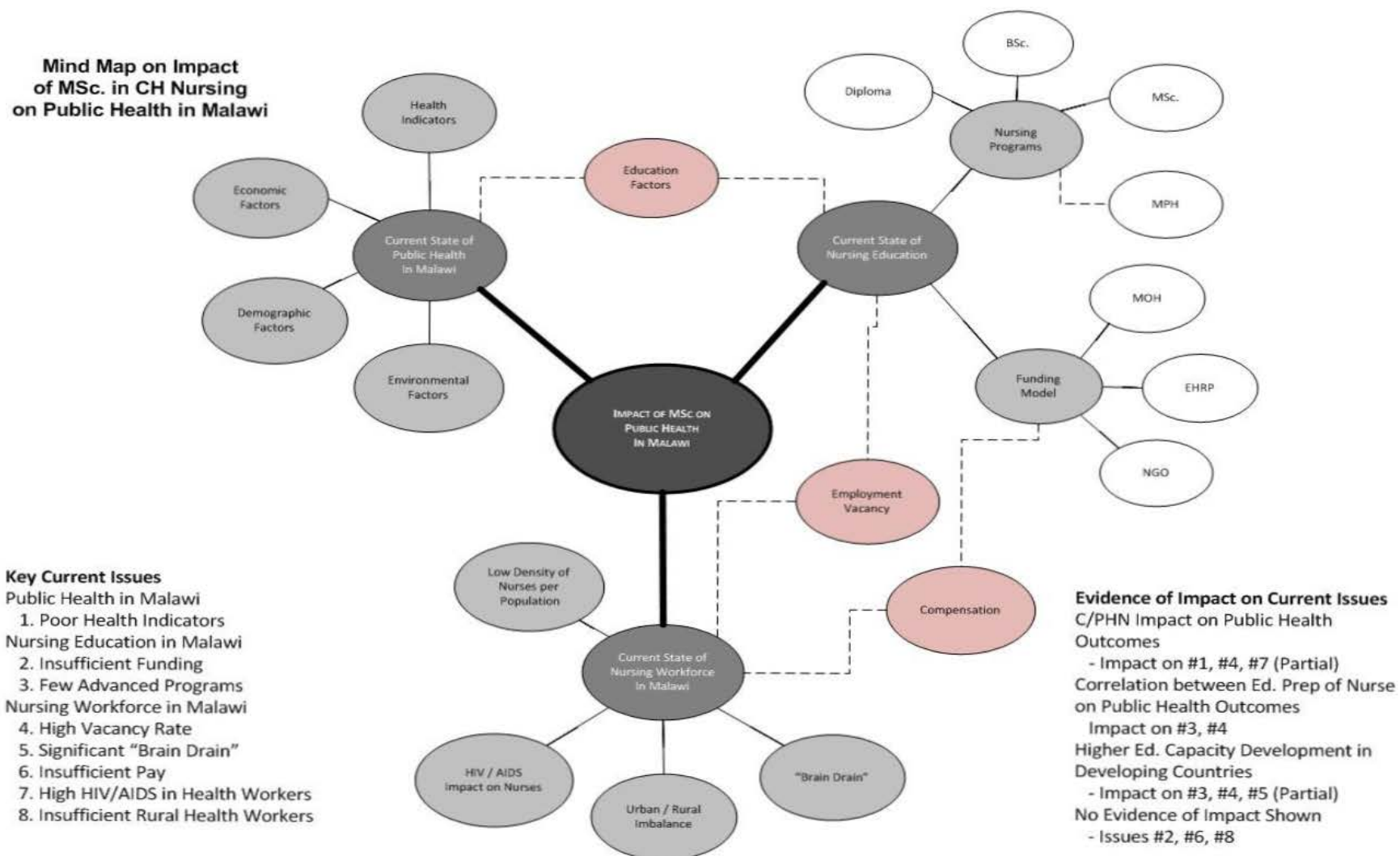
The first focus area of the literature review focused on answering the research question, “Do C/PH Nurses positively impact public health outcomes?” The literature showed that C/PH Nurses positively impact three of the public health issues in Malawi. C/PH Nurses are capable of improving health indicators through disease prevention and health promotion. C/PH Nurses, if trained in sufficient quantities, are capable of decreasing the nursing vacancy rate in

governmental and private facilities. C/PH Nurses are capable of decreasing the spread of HIV/AIDS among the nursing workforce by educating co-workers in HIV/AIDS prevention.

The second area of the literature review focused on answering the research question, “Is there a correlation between C/PH Nursing educational preparation and public health outcomes?” The literature showed that higher educational preparation of C/PH Nurses positively impacts two of the public health issues in Malawi. C/PH Nurses with advanced training are better able to improve public health indicators in a variety of settings, including in the community. C/PH Nurses are able to reduce the vacancy rate in agencies; however other factors such as economic (pay) or geographic (urban/rural) factors may reduce the impact of advanced training in this area. The third area of the literature review focused on answering the research question, “Does increased higher education capacity in developing countries improve public health outcomes?” The evidence answered this question in the affirmative. The literature showed that higher education capacity in developing countries impacts three of the public health issues in Malawi. Obviously increased higher education capacity positively impacts the availability of advanced training for C/PH Nurses in Malawi. By offering higher education programs “in country” the negative impact of “Brain Drain” would likely be reduced among C/PH Nurses due to reduced opportunities for recruitment outside Malawi. Also by training additional C/PH Nurses at an advanced level the vacancy rate in health facilities would be reduced, subject to the economic and demographic factors mentioned above.

The evidence does not support the impact on Malawi’s public health issues related to: insufficient funding for nurses educational, inadequate pay for nurses, or the imbalance between the number of nurses in urban compared to rural facilities. Additionally, the solution will only

Figure 1.0 Mind Map on Impact of Master's Degree in Community Health Nursing in Malawi



partially impact the serious problems of “Brain Drain” and the huge toll HIV/AIDS has had on the nursing workforce in Malawi. Figure 1.0--Mind Map on Impact of Master’s Degree in Community Health Nursing in Malawi--provides a visual image of the connections between the various concepts explored, the public health issues in Malawi, and the evidence provided in the literature review to help conceptualize the relationships and problems.

Recommendations

Based on the summary and analysis of issues pertaining to the question of the potential impact of a Master’s Degree in C/PH Nursing on public health issues in Malawi, I recommend that KCN develop a Master’s Degree in C/PH Nursing. However, this should be accomplished in conjunction with a comprehensive effort to rectify several prominent issues at the national level. The MOH and MOE, as well as KCN need to determine how such a program will be funded. Based on personal communication with Mr. Stephen F. Chakholoma –College Finance Officer in March, 2010, KCN has not determined the actual cost of implementing and administering a Master’s Degree in C/PH Nursing program. Whatever the costs, it is essential that KCN compare the impact on public health in Malawi to alternative use of those funds. The MOH, the largest employer of nurses in Malawi, is obliged to explore means of providing adequate pay for these nurses. The government of Malawi must explore ways to resolve the imbalance of nurses between urban and rural areas as well as develop some creative solution to prevent the immense problem of “Brain Drain” of its skilled nursing workforce. The Government of Malawi and the health care workforce need to stop the progression of the huge toll HIV/AIDS is having on the Malawian nursing workforce. The tradeoff between the impetuses on building the critical mass of Bachelorette prepared nurses and developing a Master’s Degree in C/PH Nursing needs to be carefully analyzed and prudent decision need to be made. Moreover, care

needs to be taken to assure that the development of a Master's Degree in C/PH Nursing does not inadvertently exacerbate the public health issues in Malawi.

Leadership Steps

Leadership is essential to the development of a Master's Degree in C/PH Nursing in Malawi to effectively guide and support the steps that need to be taken to assure that the implementation of this program leads to improved public health outcomes in Malawi. The key recommendations in the last section were: one, KCN should move forward with the development of a Master's Degree in C/PH Nursing; and two, KCN should do this in conjunction with a comprehensive national and international effort to resolve several prominent public health issues. In this section, examples of specific actions KCN should take are described as well as actions to be taken at the national and international levels.

The Leadership Team at KCN should consider the following leadership actions:

- a. Complete the four remaining steps of the Initial Steps in Developing a Master's Degree in Community Health Nursing in Malawi: Needs Assessment for Kamuzu College of Nursing started in March 2010, based on the Healthy Carolinians Community Health Assessment Guide Book (2008).
- b. Based on the needs assessment, develop a program implementation and evaluation plan utilizing a framework such as the W.K. Kellogg Foundation Logic Model Development Guide and the W.K. Kellogg Foundation Evaluation Handbook (Kellogg Foundation, 2001).
- c. Develop a comprehensive working outline of the curriculum for the program.
- d. Complete a cost estimate of the Master's Degree in C/PH program.

- e. Meet with the Senate of the University of Malawi and the Ministry of Health, as well as other key stakeholders, to discuss the Master's Degree in C/PH Nursing. Obtain approval and funding for the program.

The best leadership framework for national and international steps toward improved public health outcomes through higher education is the Framework for Priority Action for Change and Development of Higher Education developed by UNESCO (Appendix D). This framework calls for three major categories of leadership: Priority actions at the national level; Priority actions at the level of systems and institution; and Actions to be taken at the international level and, in particular, to be initiated by UNESCO.

Priority Actions at the National Level

The Government of Malawi--MOH and MOE—should establish a legislative, political, and financial framework for the development of higher education in Malawi with the goal of making higher education accessible to all on the basis of merit. Currently, the Government of Malawi funds the majority of higher education in Malawi, along with funds from the EHRP. Good will and leadership in this area is essential (See Appendix D—subsection I1a).

The Government of Malawi can work with the University of Malawi (KCN), Mzuzu University, as well as the other institutions of higher education in Malawi, to reinforce the links between higher education and research. Close links between higher education and research institutions both within and outside Malawi should be developed. It is vital for them to acknowledge the fact that education and research are two closely related elements in the establishment of knowledge. The government of Malawi needs to develop relationships with foreign educational institutions to support the development of evidence based studies to progress higher education in Malawi (See Appendix D—subsection I1b and I1e).

The Government of Malawi should work collaboratively with institutions of higher education within and outside Malawi to advance innovative partnerships in to guarantee that higher education and research programs effectively contribute to local, regional and national development in Malawi (See Appendix D—subsection II f).

Priority actions at the level of systems and institution

It is necessary for the Government of Malawi, the leadership of the University of Malawi (KCN), Mzuzu University, as well as the other institutions of higher education in Malawi, to work to assure that the mission of their nursing programs reflect the desire to improve the current and future public health outcomes in Malawi. They ought to base their respective missions on an awareness that higher education is essential for Malawi to reach the crucial level of social development, higher standards of living, and domestic and global harmony and peace (See Appendix D—subsection II 5).

The systems and institutions of higher education in Malawi need to take crucial leadership actions that are closely aligned with improving public health outcomes in Malawi. They have an obligation to the population of Malawi and through this obligation, must take concrete steps to improve health indicators, specifically aimed at eliminating poverty, intolerance, violence, illiteracy, and hunger and disease (See Appendix D—subsection II 6e).

It is essential that the Government of Malawi, MOE, and higher education institution, assure that they are preparing graduates for the job vacancies that exist in Malawi as well as work with employers/industry to prepare graduates for the job of the future. They must also strive to develop entrepreneurial and initiative skills in their students to facilitate employability of graduates who will not only to be job-seekers but to become job-creators (See Appendix D -- subsection II 7).

Actions to be taken at the international level and, in particular, to be initiated by UNESCO

The leadership of KCN is already taking integral leadership steps to build cooperation with other institutions of higher education. Based on their partnership with the University of San Francisco, KCN developed their MSc. Degree in Midwifery. Working with the University of Oslo, Norway, KCN implemented their MSc. Degree in Reproductive Health. The University of Malawi-College of Medicine collaborates with the University of North Carolina-School of Medicine in their inter-university Master's of Public Health (MPH) Degree, as well as with the UNC Project in Malawi conducting HIV/AIDS treatment and research in Lilongwe at the Tidziwe Clinic (See Appendix D—subsection III10).

As “Brain Drain” is having a grave impact on public health in Malawi, the Malawian government is obligated to work with UNESCO and other international agencies to embark upon actions to alleviate the negative effects of ‘Brain Drain’ and to shift to a vigorous process of ‘Brain Gain’. They could partner on a campaign through the combined effort of the international community to encourage the return Malawian academics and health professionals, while all efforts are made to build and strengthen their own educational capacity (See Appendix D—subsection III13).

The government of Malawi must work with UNESCO to ensure follow-up to the World Declaration on Higher Education and the Framework for Priority Action. They should also work collaboratively with other intergovernmental and non-governmental organizations and with all higher education stakeholders, including the United Nations University, the NGO Collective Consultation on Higher Education to assure that the capacity development of higher education is optimally fortified (See Appendix D—subsection III14f).

Through these and other leadership actions and the strategies discussed in the Literature review, Malawi can develop the capacity to improve the public health outcomes. The development of a Master's Degree in C/PH Nursing program is one significant step KCN and the government of Malawi should take to improve their present and future public health issues. Through strong leadership, Malawi could resolve concerns relating to funding; finding a means of providing adequate pay for nurses; resolving the imbalance of nurses between urban and rural areas; developing solutions to prevent the immense problem of "Brain Drain"; and halting the toll of HIV/AIDS is having on the Malawians and the nursing workforce. Additionally, the impetuses on building the critical mass of Bachelorette prepared nurses and the development of a Master's Degree in C/PH Nursing needs to be carefully analyzed and prudent decisions need to be made. Care needs to be taken to assure that the development of a Master's Degree in C/PH Nursing does not inadvertently exacerbate the public health issues in Malawi resulting in unintended consequences.

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Malawi Map



Appendix B

Health Indicators for Malawi and Neighboring Countries

	Malawi	Tanzania	Kenya	Zambia	Uganda	South Africa	Mozambique
Population Estimates	15,263,000 (2010)	43,739,000 (2009)	39,002,772 (2009)	12,935,000 (2009)	32,369,558 (2009)	49,320,000 (2009)	22,894,000 (2009)
Land Area	118,484 km² (45,747 sq mi)	945,203 km ² (364,898 sq mi)	580.367 km ² (224,080 Sq mi)	752,618 km ² (290,587 sq mi)	236,040 km ² (91,136 sq mi)	1,221,037 km ² (471 443 sq mi)	801,590 km ² (309,496 sq mi)
Population Density	128.8/km ² (333.6/sq mi)	46.3/km ² (119.9/sq mi)	67.2/km ² (174.1/sq mi)	17.2/km ² (44.5/sq mi)	137.1/km ² (355.2/sq mi)	41/km ² (106.2/sq mi)	28.7/km ² (74.3/sq mi)
Mortality							
a.Adult mortality rate	a.533/1000 (2006)	a.504/1000 (2006)	a.416/1000 (2006)	a.617/1000 (2006)	a.495/1000 (2006)	a.564/1000 (2006)	a.477/1000 (2006)
b.Under 5 mortality rate	b.120/1000 (2006)	b.118/1000 (2006)	b.121/1000 (2006)	b.182/1000 (2006)	b.134/1000 (2006)	b.69/1000 (2006)	b.138/1000 (2006)
c.Infant mortality rate	c.76/1000 (2006)	c.74/1000 (2006)	c.79/1000 (2006)	c.102/1000 (2006)	c.78/1000 (2006)	c.56/1000 (2006)	c.96/1000 (2006)
d. Death due to HIV/AIDS	d.605/ 100000 (2006)	d.365/ 100000 (2005)	d.409/ 100000 (2005)	d.840/ 100000 (2005)	d.316/ 100000 (2005)	d.675/ 100000 (2005)	d.707/ 100000 (2005)
Morbidity							
a.Incidence of TB	a.377/ 100000 (2006)	a.312/ 100000 (2006)	a.384/ 100000 (2006)	a.553/ 100000 (2005)	a.355/ 100000 (2006)	a.940/ 100000 (2006)	a.443/ 100000 (2006)
b.Prevalence of HIV(> 15)	b.12528/ 100000 (2006)	b.5909/ 100000 (2005)	b.6125/ 100000 (2005)	b.15819/ 100000 (2005)	b.6304/ 100000 (2005)	b.16579/ 100000 (2005)	b.14429/ 100000 (2005)
c.Prevalence to TB	c.322/ 100000 (2006)	c.459/ 100000 (2006)	c.334/ 100000 (2006)	c.568/ 100000 (2006)	c.561/ 100000 (2006)	c.998/ 100000 (2006)	c.624/ 100000 (2006)

	Malawi	Tanzania	Kenya	Zambia	Uganda	South Africa	Mozambique
Health Service Coverage							
a. Antenatal care coverage - at least four visits (%)	a.57% (2004)	a.62% (2004)	a.52% (2003)	a.72% (2001)	a.47% (2006)	a.73% (1998)	a.53% (2003)
b. Births attended by skilled health personnel (%)	b.54% (2006)	b.43% (2004)	b.42% (2003)	b.43% (2002)	b.42% (2006)	b.92% (2003)	b.48% (2003)
c. Antiretroviral therapy coverage among people with advanced HIV infections (%)	c.21% (2006)	c.14% (2006)	c.27% (2006)	c.26% (2006)	c.27% (2006)	c.21% (2006)	c.12% (2006)
d. Children aged <5 years sleeping under insecticide-treated nets (%)	d.23% (2006)	d.16% (2005)	d.4.6% (2003)	d.22.8% (2006)	d.9.7% (2006)	d. —	d. —
e. One-year-olds immunized with three doses of diphtheria tetanus toxoid and pertussis (DTP3) (%)	e.99% (2006)	e.90% (2006)	e.80% (2006)	e.80% (2006)	e.80% (2006)	e.99% (2006)	e.72% (2006)
Risk Factors							
a. Children under five years of age stunted for age (%)	a.52.5 (2005)	a.44.4% (2004)	a.35.8% (2003)	a.52.5% (2003)	a.44.8% (2001)	a.--	a.47% (2003)
b. Newborns with low birth weight (%)	b.16% (2000)	b.13% (1999)	b.11% (1998)	b.12% (2002)	b.12% (2000)	b.15% (1998)	b.14% (1997)
c. Population using solid fuels (%) rural/urban	c.99% /90% (2003)	c. —	c.94%/17% (2003)	c.99%/68% (2003)	c.99%/85% (2003)	c.40%/7% (2003)	c.—
d. Population with	d.76% (2006)	d.55% (2006)	d.57% (2006)	d.58% (2006)	d.64% (2006)	d.93% (2006)	d.42% (2006)

sustainable access to improved drinking water sources (%) total							
e. Prevalence of condom use by young people (15-24 years) at higher risk sex (%) female/male	e.35%/47% (2004)	e.34%/46% (2004)	e.25%/47% (2003)	e.33%/42% (2001)	e.53%/55% (2004)	e. —	e.29%/33% (2003)
f. Prevalence of current tobacco use among adolescents (13-15 years) (%) both sexes	f.18.4% (2005)	f.6.5% (2006)	f.15.1% (2007)	f.25.6% (2007)	f.16.6% (2007)	f.23.6% (2002)	f.8.2% (2002)
	Malawi	Tanzania	Kenya	Zambia	Uganda	South Africa	Mozambique
Health System Resources							
a.Environment and public health workers density	a.<1/10000 (2004)	a.<1/10000 (2002)	a.2.0/1000 (2004)	a.<1/1000 (2004)	a.<1/1000 (2004)	a.<1/1000 (2004)	a.<1/1000 (2004)
b. General government expenditure on health as percentage of total government expenditure	b.16.6% (2005)	b.12.6% (2005)	b.6.1% (2005)	b.10.7 (2005)	b.10.0% (2005)	b.9.9% (2005)	b.12.6% (2005)
c. Hospital beds	c.11/10000 (2007)	c.11/10000 (2006)	c.14/10000 (2006)	c.22/10000 (2004)	c.11/10000 (2006)	c.28/10000 (2005)	c.8.0/10000 (2006)
d. Number of: i.PH workers; ii. lab workers; iii.nurse/mdwf; iv. physicians; v. other health providers.	d. i. 26; ii. 46; iii.7264; iv. 266; v. 707	d. i. 1831, ii.1520, iii.13292, iv.822, v.29722	d. i.6496, ii.7000, iii.37113, iv.4506, v.1000	d. i.1027, ii.1415, iii.22010, iv.1264, v.3330	d. i.1042, ii.1702, iii.18969, iv.2209, v.4128	d. i.2529, ii.2002, iii.184459, iv.34829, v.54798	d. i.564, ii.941, iii.6183, iv.514, v.1659

	Malawi	Tanzania	Kenya	Zambia	Uganda	South Africa	Mozambique
Inequity in Health care and Health Outcomes							
a. Under-5 mortality rate (Probability of dying aged < 5 years per 1 000 live births) difference lowest-highest educational level of mother	a.95 (2004)	a.84 (2005)	a.63.6 (2003)	a.76.7 (2002)	a.73.7 (2006)	a.38.2 (1998)	a.114.8 (2003)
b. Under-5 mortality rate (Probability of dying aged < 5 years per 1 000 live births) ratio rural-urban	b.1.4 (2004)	b.1.3 (2005)	b.1.3 (2003)	b.1.3 (2002)	b.1.3 (2006)	b.1.6 (1998)	b.1.3 (2003)
c. Measles immunization coverage among one-year-olds difference highest-lowest educational level of mother	c.21.8 (2004)	c.25.2 (2005)	c.33.8 (2003)	c.7.4 (2002)	c.17.6 (2006)	c.21.6 (1998)	c.33.5 (2003)
d. Measles immunization coverage among one-year-olds difference highest-lowest wealth quintile	d.20.9 (2004)	d.25.7 (2005)	d.33.2 (2003)	d.7.2 (2002)	d.6.7 (2005)	d.11.0 (1998)	d.35.6 (2003)

	Malawi	Tanzania	Kenya	Zambia	Uganda	South Africa	Mozambique
Demographic and Socioeconomic Statistics							
a. Adolescent fertility rate (%) per 1000	a.160% (2003)	a.139% (2003)	a.116% (2001)	a.161% (2000)	a.159% (2004)	a.65% (2001)	a.185% (2001)
b. Total fertility rate (per woman)	b.5.7 (2006)	b.5.3 (2006)	b.5.0 (2006)	b.5.3 (2006)	b.6.6 (2006)	b.2.7 (2006)	b.5.2 (2006)
c. Population living below the poverty line (% living on < US\$1 per day)	c.20.8% (2004)	c.57.8% (2000)	c. —	c.63.8% (2004)	c.—	c.10.7% (2000)	c.36.2% (2002)
d. Population median age (years)	d.16 (2006)	d.18 (2006)	d.18 (2006)	d.17 (2006)	d.15 (2006)	d.24 (2006)	d.18 (2006)
e. Population proportion over 60 (%)	e.5.0% (2006)	e.5.0% (2006)	e.4.0% (2006)	e.5.0% (2006)	e.4.0% (2006)	e.7.0% (2006)	e.5.0% (2006)
Top 5 Leading Causes of Death	1.HIV/AIDS 34% 2.Low Resp. Inf. 12% 3.Malaria 8% 4. Diarrheal Diseases 8% 5.Perinatal conditions 3%	1.HIV/AIDS 29% 2. Low Resp. Inf. 12% 3.Malaria 10% 4. Diarrheal Diseases 6% 5.Perinatal conditions 4%	1.HIV/AIDS 38% 2. Low Resp. Inf. 10% 3. Diarrheal Diseases 7% 4.Tuberculosis 4% 5.Malaria 5%	1.HIV/AIDS 43% 2. Low Resp. Inf. 12% 3.Malaria 9% 4. Diarrheal Diseases 7% 5.Perinatal conditions 4%	1.HIV/AIDS 25% 2.Malaria 11% 3. Low Resp. Inf. 11% 4. Diarrheal Diseases 8% 5. Perinatal conditions 4%	1.HIV/AIDS 52% 2. Cerebral-vascular disease 5% 3.Ischemic heart disease 4% 4. Low Resp. Inf. 4% 5.Violence 3%	1.HIV/AIDS 28% 2.Malaria 9% 3. Diarrheal Diseases 8% 4. Low Resp. Inf. 7% 5. Perinatal conditions 5%

Appendix C

Educational Programs in Malawi Offering Training for Nurses

Name of Agency	Contact Information for Agency	Services/Training Provided	Other Information
Kamuzu College of Nursing	<p>Blantyre Campus P.O. Box 415 Blantyre, Malawi</p> <p>Lilongwe Campus Private Bag 1 Lilongwe, Malawi 265 (0)1 751 622 Fax 265(0)1 756 424 www.kcn.unima.mw/ www.unima.mw</p>	<p>-MSc. Midwifery -MSc. Reproductive Health -BSc. in Nursing -BSc. In Nursing and Midwifery -BSc. in Nursing (Post-basic) -University Certificate in Midwifery</p>	<p>University of Malawi Constituent College.</p> <p>Principal: Dr. Address Malata Vice Principal: Dr. Ellen Chirwa Dean of Post Graduate and Research: Dr. Angela Chimwaza Dean of Faculty: Mrs. Regina Msolomba Dean of Student: Mrs. Mercy Pendani</p>
Mzuzu University	<p>Luwinga Campus Private Bag 201 Off Mzuzu Karnga Road Mzuzu 2, Malawi 265 (0) 1 320 722 265 (0) 1 320 575 registrar@mzuni.ac.mw www.mzuni.ac.mw/Health_Science.htm</p>	BSc. Nursing and Midwifery	Established by an Act of Parliament in 1997 as <i>Malawi's</i> second national (public) university
St. John of God College of Health Sciences	<p>P.O Box 744 Mzuzu, Malawi</p> <p>265 (0) 1 311 690 265 (0) 1 311 495 Email: collegehs@sjog.mw sjog@sjog.mw</p>	<p>BSc. in Mental Health and Psychiatric Nursing BSc. in Clinical Medicine (mental Health) University Diploma in Counseling</p>	<p>Established in 2003 Accredited by the University of Malawi</p> <p>Christian Health Association of Malawi (CHAM) Proprietor: Mzuzu Diocese</p>
Ekwendeni College of Nursing in Mzimba	<p>Ekwendeni Campus P.O. Box 6 Ekwendeni, Malawi</p>	<p>Diploma in Nursing and Midwifery Nurse Technicians</p> <p><u>2010 Plans:</u> Upgrading Nurse Technician to Diploma</p> <p>Diploma: Clinical Officer Training</p> <p>Diploma in Public Health</p>	<p>University of Livingstonia Church of Central Africa, Presbyterian (CCAP) Mission Christian Health Association of Malawi (CHAM) Proprietor: Livingstonia Synod</p> <p>Principal: Flemmings Nkhandwe Staff: 13 (3 clinical instructors, 10 tutors)</p>

Name of Agency	Contact Information for Agency	Services/Training Provided	Other Information
Holy Family College of Nursing in Phalombe	Holy Family Mission Hospital Box. 144 Phalombe, Malawi	Nurse-Midwife Technicians	Christian Health Association of Malawi (CHAM) Proprietor: Archdiocese Blantyre
Malamulo College of Health Sciences in Thyolo	P.O. Box 55 Makawasa, Malawi 265 (0) 1470117	Nurse-Midwife Technicians, Laboratory Technicians, Medical Assistant, Clinical Officers	Established in 1938 at Malamulo Hospital Christian Health Association of Malawi (CHAM) Proprietor: 7 th Day Adventist
Mulanje College of Nursing in Mulanje	Mulanje Mission Hospital CCAP Blantyre Synod P.O.Box 45 Mulanje Malawi Tel: +265 1 467044 / 095 Fax: +265 1 467022 E-mail: mmcn@sndp.org.mw	Nurse-Midwife Technicians	Founded in 1932 6 tutors with capacity of 40 students per year with an average of 25 graduates each year. Principal, Mr. Rabson Mchemba Christian Health Association of Malawi (CHAM)
Nkhoma College of Nursing in Lilongwe	P.O. Box 48 Lilongwe, Malawi 265 (0) 1751 917 Fax 265 (0) 1 751 125 nkhoma@malawi.net	Nurse-Midwife Technicians	Trains 100 nurses yearly Christian Health Association of Malawi (CHAM) Proprietor: Nkhoma Synod
St. Johns College of Nursing in Mzimba	P.O. Box 18 Mzuzu, Malawi 265 (0) 1311 331	Nurse-Midwife Technicians	Christian Health Association of Malawi (CHAM) Proprietor: Mzuzu Diocese
St. Josephs College of Nursing in Blantyre	P. O. Box 5505 Limbe, Malawi	Nurse-Midwife Technicians	Christian Health Association of Malawi (CHAM)
St. Lukes College of Nursing in Zomba	P.O. Box 21 Chilemba, Malawi 265 (0) 1 539 215	Nurse-Midwife Technicians	Christian Health Association of Malawi (CHAM) Proprietor: Diocese of Upper Shire
Trinity College of Nursing in Blantyre	P.O. Box 51937 Limbe, Malawi	Nurse-Midwife Technicians	Christian Health Association of Malawi (CHAM) Proprietor: Chikwawa Diocese

Name of Agency	Contact Information for Agency	Services/Training Provided	Other Information
Malawi College of Health Sciences	Lilongwe Campus P.O. Box 30368 Lilongwe 3, Malawi Phone: 265 01 756 908/ 01 756 777 Fax: 265 01 750 709/ 01 754 425 mchs@malawi.net	Clinical officers, medical assistants, laboratory technicians, radiology technician, nurse technicians, Diploma Nurses and psychiatric nurses, & upgrading Diploma in Nursing and Midwifery	The Director of the College of Health Sciences: T.G Masache
Malawi College of Health Sciences	Blantyre Campus Private Bag 396 Blantyre, Malawi Mchs.bt.campus@yahoo.com Phone: 265 01 870 765 Fax: 265 01 871 436	Clinical officers, medical assistants, laboratory technicians, radiology technician, nurse technicians, Diploma Nurses and psychiatric nurses, & upgrading Diploma in Nursing and Midwifery	The Director of the College of Health Sciences: T.G Masache
Malawi College of Health Science	Zomba Campus P.O. Box 122 Zomba, Malawi Phone: 265 01 524 661 Fax: 265 01 525 826	Clinical officers, medical assistants, laboratory technicians, radiology technician, nurse technicians, Diploma Nurses and psychiatric nurses, & upgrading Diploma in Nursing and Midwifery	The Director of the College of Health Sciences: T.G Masache
University of Malawi-College of Medicine	Private Bag 360 Chichiri Blantyre 3, Malawi Phone: 265 01 751 200 or 265 01 757 278 www.medcol.mw www.unima.mw	Master of Public Health (MPH)	Chairman of Community Health Department: Dr. Joseph Mfutso-Bengo

Appendix D

**FRAMEWORK FOR PRIORITY ACTION FOR CHANGE
AND DEVELOPMENT OF HIGHER EDUCATION****I. PRIORITY ACTIONS AT NATIONAL LEVEL**

1. **States, including their governments, parliaments and other decision-makers**, should:

(a) establish, where appropriate, the legislative, political and financial framework for the reform and further development of higher education, in keeping with the terms of the Universal Declaration of Human Rights, which establishes that **higher education shall be ‘accessible to all on the basis of merit’**. **No discrimination can be accepted**, no one can be excluded from higher education or its study fields, degree levels and types of institutions on grounds of race, gender, language, religion, or age or because of any economic or social distinctions or physical disabilities;

(b) reinforce the links between higher education and research;

(c) consider and use higher education as a catalyst for the entire education system;

(d) develop higher education institutions to include lifelong learning approaches, giving learners an optimal range of choice and a flexibility of entry and exit points within the system, and redefine their role accordingly, which implies the development of open and continuous access to higher learning and the need for bridging programmes and prior learning assessment and recognition;

(e) make efforts, when necessary, to establish close links between higher education and research institutions, taking into account the fact that education and research are two closely related elements in the establishment of knowledge;

(f) develop innovative schemes of collaboration between institutions of higher education and different sectors of society to ensure that higher education and research programmes effectively contribute to local, regional and national development;

(g) fulfil their commitments to higher education and be accountable for the pledges adopted with their concurrence, at several forums, particularly over the past decade, with regard to human, material and financial resources, human development and education in general, and to higher education in particular;

(h) have a policy framework to ensure new partnerships and the involvement of all relevant stakeholders in all aspects of higher education: the evaluation process, including curriculum and pedagogical renewal, and guidance and counselling services; and, in the framework of existing institutional arrangements, policy-making and institutional governance;

(i) **define and implement policies to eliminate all gender stereotyping in higher education** and to consolidate women’s participation at all levels and in all disciplines in which they are under-represented at present and, in particular, to enhance their active involvement in decision-making;

(j) **establish clear policies concerning higher education teachers**, as set out in the Recommendation concerning the Status of Higher-Education Teaching Personnel approved by the General Conference of UNESCO in November 1997;

(k) recognize students as the centre of attention of higher education, and one of its stakeholders. They should be involved, by means of adequate institutional structures, in the renewal of their

level of education (including curriculum and pedagogical reform), and policy decision, in the framework of existing institutional arrangements;

(l) recognize that students have the right to organize themselves autonomously;

(m) promote and facilitate national and international mobility of teaching staff and students as an essential part of the quality and relevance of higher education;

(n) provide and ensure those conditions necessary for the exercise of academic freedom and institutional autonomy so as to allow institutions of higher education, as well as those individuals engaged in higher education and research, to fulfill their obligations to society.

2. States in which enrolment in higher education is low by internationally accepted comparative standards should strive to ensure a level of higher education adequate for relevant needs in the public and private sectors of society and to establish plans for diversifying and expanding access, particularly benefiting all minorities and disadvantaged groups.

3. The interface with general, technical and professional secondary education should be reviewed in depth, in the context of lifelong learning. Access to higher education in whatever form must remain open to those successfully completing secondary education or its equivalent or meeting entry qualifications at any age, while creating gateways to higher education, especially for older students without any formal secondary education certificates, by attaching more importance to their professional experience. However, **preparation for higher education should not be the sole or primary purpose of secondary education, which should also prepare for the world of work**, with complementary training whenever required, in order to provide knowledge, capacities and skills for a wide range of jobs. The concept of bridging programmes should be promoted to allow those entering the job market to return to studies at a later date.

4. **Concrete steps should be taken to reduce the widening gap between industrially developed and developing countries, in particular the least developed countries, with regard to higher education and research.** Concrete steps are also needed to encourage increased co-operation between countries at all levels of economic development with regard to higher education and research. Consideration should be given to making budgetary provisions for that purpose, and developing mutually beneficial agreements involving industry, national as well as international, in order to sustain co-operative activities and projects through appropriate incentives and funding in education, research and the development of high-level experts in these countries.

II. PRIORITY ACTIONS AT THE LEVEL OF SYSTEMS AND INSTITUTIONS

5. **Each higher education institution should define its mission according to the present and future needs of society** and base it on an awareness of the fact that higher education is essential for any country or region to reach the necessary level of sustainable and environmentally sound economic and social development, cultural creativity nourished by better knowledge and understanding of the cultural heritage, higher living standards, and internal and international harmony and peace, based on human rights, democracy, tolerance and mutual respect. These missions should incorporate the concept of academic freedom set out in the Recommendation concerning the Status of Higher-Education Teaching Personnel approved by the General Conference of UNESCO in November 1997.

6. In establishing priorities in their programmes and structures, higher education institutions should:

- (a) take into account the need to abide by the rules of ethics and scientific and intellectual rigour, and the multidisciplinary and transdisciplinary approach;
- (b) be primarily concerned to establish systems of access for the benefit of all persons who have the necessary abilities and motivations;
- (c) use their autonomy and high academic standards to contribute to the sustainable development of society and to the resolution of the issues facing the society of the future. They should develop their capacity to give forewarning through the analysis of emerging social, cultural, economic and political trends, approached in a multidisciplinary and transdisciplinary manner, giving particular attention to:
 high quality, a clear sense of the social pertinence of studies and their anticipatory function, based on scientific grounds;
 knowledge of fundamental social questions, in particular related to the elimination of poverty, to sustainable development, to intercultural dialogue and to the shaping of a culture of peace;
 the need for close connection with effective research organizations or institutions that perform well in the sphere of research;
 the development of the whole education system in the perspective of the recommendations and the new goals for education as set out in the 1996 report to UNESCO of the International Commission on Education for the Twenty-first Century;
 fundamentals of human ethics, applied to each profession and to all areas of human endeavour;
- (d) ensure, especially in universities and as far as possible, that faculty members participate in teaching, research, tutoring students and steering institutional affairs;
- (e) take all necessary measures to reinforce their service to the community, especially their activities aimed at eliminating poverty, intolerance, violence, illiteracy, hunger and disease, through an interdisciplinary and transdisciplinary approach in the analysis of challenges, problems and different subjects;
- (f) **set their relations with the world of work on a new basis** involving effective partnerships with all social actors concerned, starting from a reciprocal harmonization of action and the search for solutions to pressing problems of humanity, all this within a framework of responsible autonomy and academic freedoms;
- (g) ensure high quality of international standing, **consider accountability and** both internal and external **evaluation**, with due respect for autonomy and academic freedom, **as being normal and inherent in their functioning**, and institutionalize transparent systems, structures or mechanisms specific thereto;
- (h) as lifelong education requires academic staff to update and improve their teaching skills and learning methods, even more than in the present systems mainly based on short periods of higher teaching, establish appropriate academic staff development structures and/or mechanisms and programmes;
- (i) **promote and develop research, which is a necessary feature of all higher education systems**, in all disciplines, including the human and social sciences and arts, given their relevance for development. Also, research on higher education itself should be strengthened through mechanisms such as the UNESCO/UNU Forum on Higher Education and the UNESCO Chairs in Higher Education. Objective, timely studies are needed to ensure continued progress towards such key national objectives as access, equity, quality, relevance and diversification;

- (j) remove **gender inequalities and biases in curricula and research**, and take all appropriate measures to ensure balanced representation of both men and women among students and teachers, at all levels of management;
- (k) **provide**, where appropriate, **guidance and counseling, remedial courses, training in how to study and other forms of student support**, including measures to improve student living conditions.

7. While the need for closer links between higher education and the world of work is important worldwide, it is particularly vital for the developing countries and especially the least developed countries, given their low level of economic development. Governments of these countries should take appropriate measures to reach this objective through appropriate measures such as strengthening institutions for higher/professional/vocational education. At the same time, international action is needed in order to help establish joint undertakings between higher education and industry in these countries. It will be necessary to give consideration to ways in which higher education graduates could be supported, through various schemes, following the positive experience of the micro-credit system and other incentives, in order to start small- and medium-size enterprises. At the institutional level, developing entrepreneurial skills and initiative should become a major concern of higher education, in order to facilitate employability of graduates who will increasingly be required not only to be job-seekers but to become job-creators.

8. **The use of new technologies should be generalized to the greatest extent possible** to help higher education institutions, to reinforce academic development, to widen access, to attain universal scope and to extend knowledge, as well as to facilitate education throughout life. Governments, educational institutions and the private sector should ensure that informatics and communication network infrastructures, computer facilities and human resources training are adequately provided.

9. Institutions of higher education should be open to adult learners:

- (a) by developing coherent mechanisms to recognize the outcomes of learning undertaken in different contexts, and to ensure that credit is transferable within and between institutions, sectors and states;
- (b) by establishing joint higher education/community research and training partnerships, and by bringing the services of higher education institutions to outside groups;
- (c) by carrying out interdisciplinary research in all aspects of adult education and learning with the participation of adult learners themselves;
- (d) by creating opportunities for adult learning in flexible, open and creative ways.

III. ACTIONS TO BE TAKEN AT INTERNATIONAL LEVEL AND, IN PARTICULAR, TO BE INITIATED BY UNESCO

10. **Co-operation should be conceived of as an integral part of the institutional missions of higher education institutions and systems.** Intergovernmental organizations, donor agencies and non-governmental organizations should extend their action in order to develop inter-university co-operation projects in particular through twinning institutions, based on solidarity and partnership, as a means of bridging the gap between rich and poor countries in the vital areas

of knowledge production and application. Each institution of higher education should envisage the creation of an appropriate structure and/or mechanism for promoting and managing international co-operation.

11. UNESCO, and other intergovernmental organizations and non-governmental organizations active in higher education, the states through their bilateral and multilateral co-operation programmes, the academic community and all concerned partners in society should further **promote international academic mobility** as a means to advance knowledge and knowledge-sharing in order to bring about and promote solidarity as a main element of the global knowledge society of tomorrow, including through strong support for the joint work plan (1999-2005) of the six intergovernmental committees in charge of the application of the regional conventions on the recognition of studies, degrees and diplomas in higher education and through large-scale co-operative action involving, *inter alia*, the establishment of an educational credit transfer scheme, with particular emphasis on South-South co-operation, the needs of the least developed countries and of the small states with few higher education institutions or none at all.

12. Institutions of higher education in industrialized countries should strive to make arrangements for international co-operation with sister institutions in developing countries and in particular with those of poor countries. In their co-operation, the institutions should make efforts to ensure fair and just recognition of studies abroad. UNESCO should take initiatives to develop higher education throughout the world, setting itself clear-cut goals that could lead to tangible results. One method might be to implement projects in different regions renewing efforts towards creating and/or strengthening centres of excellence in developing countries, in particular through the UNITWIN/UNESCO Chairs Programme, relying on networks of national, regional and international higher education institutions.

13. UNESCO, together with all concerned parts of society, should also undertake action in order to **alleviate the negative effects of 'brain drain' and to shift to a dynamic process of 'brain gain'**. An overall analysis is required in all regions of the world of the causes and effects of brain drain. **A vigorous campaign** should be launched **through the concerted effort of the international community** and on the basis of academic solidarity and should encourage the return to their home country of expatriate academics, as well as the involvement of **university volunteers** - newly retired academics or young academics at the beginning of their career - who wish to teach and undertake research at higher education institutions in developing countries. At the same time it is essential to support the developing countries in their efforts to build and strengthen their own educational capacities.

14. Within this framework, UNESCO should:

(a) **promote better co-ordination among intergovernmental, supranational and non-governmental organizations, agencies and foundations that sponsor existing programmes and projects for international co-operation in higher education.** Furthermore, co-ordination efforts should take place in the context of national priorities. This could be conducive to the pooling and sharing of resources, avoid overlapping and promote better identification of projects, greater impact of action and increased assurance of their validity through collective agreement and review. Programmes aiming at the rapid transfer of knowledge, supporting institutional development and establishing centres of excellence in all areas of knowledge, in particular for

peace education, conflict resolution, human rights and democracy, should be supported by institutions and by public and private donors;

(b) jointly with the United Nations University and with National Commissions and various intergovernmental and non-governmental organizations, become a forum of reflection on higher education issues aiming at: (i) preparing update reports on the state of knowledge on higher education issues in all parts of the world; (ii) promoting innovative projects of training and research, intended to enhance the specific role of higher education in lifelong education; (iii) reinforcing international co-operation and emphasizing the role of higher education for citizenship education, sustainable development and peace; and (iv) facilitating exchange of information and establishing, when appropriate, a database on successful experiences and innovations that can be consulted by institutions confronted with problems in their reforms of higher education;

(c) take specific action to support institutions of higher education in the least developed parts of the world and in regions suffering the effects of conflict or natural disasters;

(d) make renewed efforts towards creating or/and strengthening centres of excellence in developing countries;

(e) take the initiative to draw up an international instrument on academic freedom, autonomy and social responsibility in connection with the Recommendation concerning the Status of Higher-Education Teaching Personnel;

(f) ensure follow-up to the World Declaration on Higher Education and the Framework for Priority Action, jointly with other intergovernmental and non-governmental organizations and with all higher education stakeholders, including the United Nations University, the NGO Collective Consultation on Higher Education and the UNESCO Student Forum. It should have a crucial role in promoting international co-operation in the field of higher education in implementing this follow-up. Consideration should be given to according priority to this in the development of UNESCO's next draft Programme and Budget.